

CHOONG HAN JUN (COPYRIGHTED) ©

# MODELS: Atoms & Molecules

# CHAPTER ANALYSIS



## 5 KEY CONCEPTS

- Describe an atom as an electrically neutral entity made up of a positively charged nucleus (protons and neutrons) with negatively charged electrons moving around the nucleus
- Compare the relative size of an atom to other objects
- Show an awareness that atoms of an element have a unique number of protons
- Recognise that atoms have mass that is contributed by the mass of the nucleus
- Show an understanding that a molecule is a group of two or more atoms chemically combined together

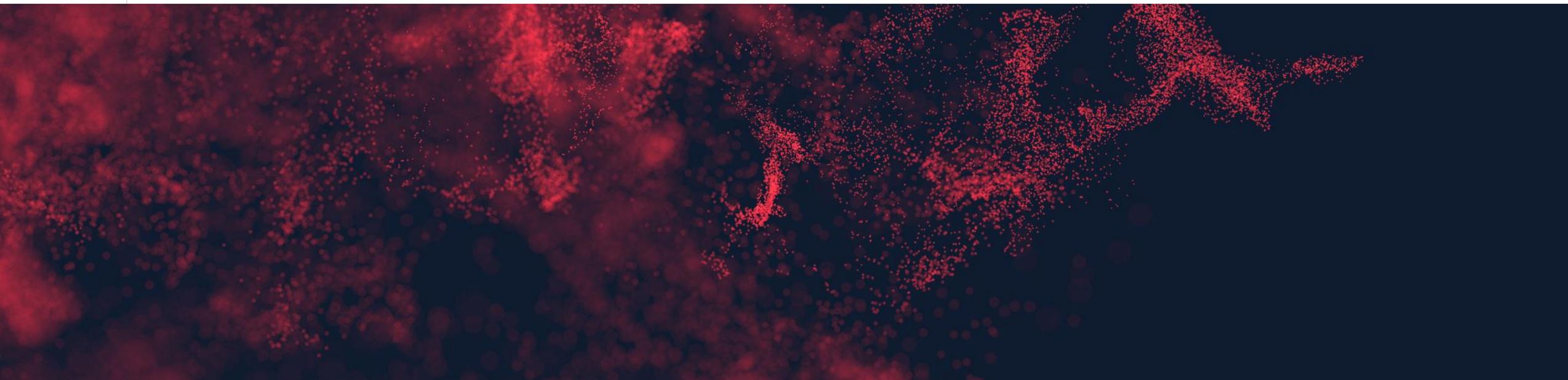


## 2 ADVANCED CONCEPTS

- Compare atoms and molecules
- State the number and types of atoms, given the chemical formula of a compound

KEY CONCEPT

# ATOMS & MOLECULES



# ATOMS & MOLECULES

## ATOMS

Definition: An atom is the smallest unit of an element

### Representation of atoms

Small spheres



Hydrogen

Symbol

Hydrogen **H**

Circles (w symbol)



## MOLECULES

Definition: A molecule is a group of two or more atoms chemically joined together

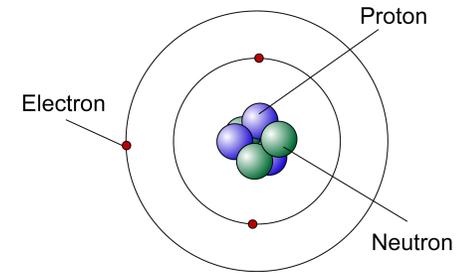
### Representation of molecules

We use the *chemical formula* of molecules instead of just symbols

- The *chemical formula* of a molecule shows the number and types of atoms contained in it

Non-metal element	Compound
Chemical formula for a molecule of chlorine is <b>Cl<sub>2</sub></b>	Chemical formula for a molecule of water is <b>H<sub>2</sub>O</b>
<p style="text-align: center;"><b>Cl<sub>2</sub></b></p> <ul style="list-style-type: none"> <li>Cl is the symbol of a chlorine atom</li> <li>2 tells us that there are 2 chlorine atoms in a chlorine molecule</li> </ul>	<p style="text-align: center;"><b>H<sub>2</sub>O</b></p> <ul style="list-style-type: none"> <li>Water is made up of H (hydrogen) and O (oxygen)</li> <li>2 tells us that there are 2 hydrogen atoms in a water molecule</li> </ul>

## MODEL OF AN ATOM



The nucleus of an atom contains **protons & neutrons** (equal number)

### **Proton**

- Positive charge
- Relative mass: 1

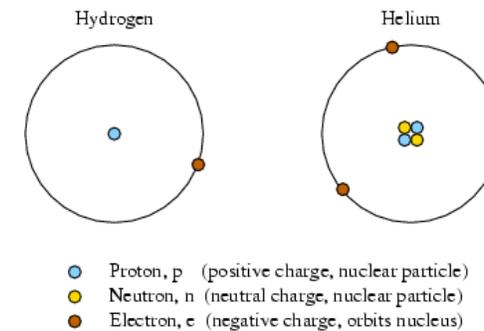
### **Neutron**

- Same mass as proton
- No charge (neutral)

### **Electron**

- Negative charge
- Relative mass: 1/1836 of proton/neutron mass

### **Differences between atoms**



### **Proton (atomic) number**

The proton number of an element refers to the **number of protons that atom has**.

# COMPOSITION OF ATOMS



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